

# 2020 City of Golden Sustainability Strategic Plan

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A Five-Year Approach toward Meeting Golden's Sustainability Goals

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## Executive Summary

This update to previous versions of the City of Golden Sustainability Strategic Plan outlines a 5-year approach for the Community Sustainability Advisory Board to follow on its path to achieve the city's adopted sustainability goals. The initiatives featured in the Plan include:

- Implementing best practices in energy efficient buildings
- Providing thorough and relevant sustainability education and communication
- Reducing community and municipal energy consumption
- Increasing Golden's commitment to renewable energy
- Reducing overall solid waste and diverting recyclables and compostables
- Incentivizing alternative methods of transportation
- Conserving water and improving water efficiency

## Purpose

This Sustainability Strategic Plan sets forth strategies that CSAB commits to investigate, evaluate and develop over the next five years to meet the City's sustainability goals. The Plan documents community-generated ideas for the Board to further evaluate and make recommendations to City Council in achieving its sustainability goals. In the case of energy, the purpose relates to the global climate crisis and the City's commitment to do its part to meet global goals.

CSAB recognizes that the path to becoming a sustainable city is a long-term commitment which has no finite end. In striving to become more sustainable, these strategies will provide direction in the city's consideration for innovative ideas and emerging technologies.

As Golden implements new policy initiatives, CSAB is committed to continually reviewing its policy goals in light of new technologies, scientific advances and changing local, regional, and national objectives. As a necessary part of fulfilling its mission and evaluating progress, CSAB intends to include the following:

- Review the Sustainability Strategic Plan on an annual basis and update as necessary.
- Review goals and metrics in 5 years (2025), or sooner, if warranted.
- Trend performance and progress of the goals revised in 2019 compared to the original 2007 baseline and provide annual Sustainability Progress reports.

In future versions of the Sustainability Strategic Plan, CSAB will look for opportunities to revise or expand sustainable policies to address Golden's current needs and abilities. Consideration of all proposed initiatives and programs will include a rigorous cost-benefit analysis and CSAB will recommend that Council adopt policies and programs that offer the greatest benefit to Golden residents and businesses.

What is Sustainability?

In Golden, and indeed across the U.S. and other nations, we are faced with impacts as a result of population growth, resource consumption, and energy needs. Golden is also affected by regional impacts such as the economy, the structuring of local tax revenues, and competing needs for resources by adjacent communities.

Balancing these factors, the Community Sustainability Advisory Board defines Sustainability as *living or acting in a manner that balances improving our quality of life, a healthy vibrant community, and mindful stewardship of the natural resources and environment while protecting the ability of future generations to do the same*. With this in mind, the Board recognizes that sustainability efforts are not an end goal, but endeavors to continually strive toward improvement.

### **CSAB Mission Statement**

*The mission of the Community Sustainability Advisory Board is to assist the City of Golden in defining and achieving its sustainability goals and to empower the community to live in a way that assures a high quality of life for current and future generations.*

The Community Sustainability Advisory Board is made up of seven Golden residents appointed by City Council who bring a broad perspective of sustainability expertise, including three at-large members, a small to medium business owner, a representative from a public research facility, an education professional and a sustainability industry representative.

### **Current Goals**

Adopted on February 14, 2019 by Golden City Council through Resolution No. 2656, Golden intends to meet the following Sustainability Goals:

- A. Energy
  - 1) Renewables. To achieve 100% renewable energy for electricity by 2030 and 100% renewable for heating by 2050. To align Greenhouse Gas Emission reductions with the Paris Accord by 2050.
  - 2) Efficiency. To reduce consumption of electricity by 15% by 2030 and reduce consumption of natural gas by 15% by 2030.
  - 3) Transportation. To achieve 20% fossil fuel-free transportation sector by 2030 and 100% fossil fuel-free transportation sector by 2050.
- B. Waste. To reduce total landfill contribution by 40% by 2030. This means:
  - 1) Recycle 80% of recyclables by 2030.
  - 2) Compost 80% of compostables by 2030.
  - 3) Reduce total trash by 20% by 2030.
  - 4) Strive for zero waste in municipal operations by 2030.

## C. Water

- 1) Responsible Use. To reduce per capita total water use in Golden by at least 15% by 2030.
- 2) Drought Planning. To develop a resiliency plan by 2020 to prepare for a time where Golden's and Colorado's climate may be substantially warmer and drier than it is today.
- 3) Resource Recovery. To develop and implement a plan by 2020 where Golden's surplus water is used effectively not only to manage the cost of water and sewer services, but to enhance the environment in Golden and elsewhere in our watershed. And to recover resources from the city's wastewater by 2030.

## Guiding Principles

The Golden Vision 2030 Plan, created with community input and adopted unanimously by City Council in 2010, lists sustainability as one of two fundamental guiding principles for the city.

### *Controlled and Directed Change*

*Our community values require that we direct and manage change, assure smart growth (transportation & development), affordable housing, and sustainability. As a community, we expect sustainability that preserves the small town look, feel and character.*

In addition, Golden Vision 2030 outlines a value-based decision making process in which sustainability impacts of programs and policies are identified and considered. From the Plan, *Decision-makers should,*

*Recognize that the continued economic and environmental sustainability of the community is critical to maintaining our Heart & Soul community values.*

## Regional and Global Commitments

Over the past several years, other strategic initiatives have been adopted that contribute toward the success of the goals and also align with the overall Golden Sustainability Initiative.

The City as an organization, City Council, and the Mayor belong to several organizations dedicated to addressing climate change. These include:

- The Paris Accord, aka, the United Nations Paris Agreement. In recognition of the current threat to our environment and in an effort to place Golden in the forefront of global communities willing to do their part to help make a difference, the Golden City Council endorsed the Paris Climate Accords goals in 2017.
- Sierra Club's Ready For 100 – a target to achieve 100% renewable energy for communities
- Colorado Communities for Climate Action – a coalition of local governments advocating for stronger state and federal climate policy.
- The Compact of Colorado Communities – a statewide group of elected officials and staffs, dedicated to climate projects, trainings, and policies.
- Climate Mayors – a peer network of U.S. mayors demonstrating leadership and building political will for effective federal and global policy action.
- WaterNow Alliance – Western U.S. communities focused on sustainable water infrastructure and policies

- Cities for Climate Protection – a campaign by ICLEI Local Governments for Sustainability to adopt milestones including a greenhouse gas emissions inventory and action plan.
- Additionally, the State of Colorado passed House Bill 19-1261 in 2019 which adopted greenhouse gas reduction goals in state statute, including a 26% reduction from a 2015 baseline by 2025.

### *Using This Document*

The strategies in this Plan will be further evaluated by CSAB and developed into recommendations to City Council for possible policy adoption and implementation between 2020 and 2025.

The Strategic Plan is organized as follows:

**Sustainability Focus.** The sustainability goals are directed toward three focus areas; energy, waste and water.

**Vision.** A synopsis of the City's vision for future sustainable practice in each focus area.

**Sustainability Goals.** The adopted goal related to each focus area.

**Strategy Name.** This describes a higher level concept of the overall strategy associated with a specific goal.

**Problem Statement.** A concise explanation of the issue addressed with context and relevance.

**Intent.** The motivation or purpose behind the specific strategy.

**Strategies.** A list of potential efforts, programs, or policies that contribute toward the overall strategy.

**Metrics.** This section includes the metrics currently used to measure progress and evaluate the strategy's effectiveness.

**Timeline for Evaluation.** Strategies will be evaluated either in the near term (2020) or over a longer period (2021-2025) based on their scope and complexity.

# ENERGY

## *Vision.*

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The energy future for Golden transitions away from fossil fuels and becomes independent from reliance on fossil fuel energy. Golden will control its local energy source choices. Diversification of renewable energy sources will increase the city's resilience and seek carbon neutrality.

## *Goals*

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### Goal 1: Renewables

Goal 1.1: To achieve 100% renewable energy for electricity by 2030 and 100% renewable for heating by 2050.

Goal 1.2: To achieve 100% renewable heating by 2050.

Goal 1.3: To align Greenhouse Gas Emission reductions with the Paris Accord by 2050.

### Goal 2: Efficiency

Goal 2.1: To reduce consumption of electricity by 15% by 2030.

Goal 2.2: To reduce consumption of natural gas by 15% by 2030.

### Goal 3: Transportation

Goal 3.1:

To achieve 20% fossil fuel-free transportation sector by 2030 and 100% fossil fuel-free transportation sector by 2050.

## *Strategies*

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Goal 1.1: To achieve 100% renewable energy for electricity by 2030.

### Strategy 1. Preserve the Right to Solar For All

Problem: Tree growth and new construction in Golden may impeded sun exposure of solar rooftop installations over their system lifetime.

Intent: An ordinance intends to preserve solar exposure and regulate compensations required among involved parties in case of solar exposure conflicts.

- 1.1 A “right to solar access ordinance” regulating compensation measures for existing systems in case of solar installation conflicts between parties.
- 1.2 A tree preservation fund to replace the value of private trees and plantings in public areas in cases of tree removals to allow for solar installations.
- 1.3 A community solar offset fund to provide subscriptions to building owners impacted by taller neighboring developments.

Possible Metrics:

- Number of “Right to Solar for All” conflicts within City boundaries per year
- Number of conflicts that have been resolved such that solar production is maintained.

Timeline for Evaluation: Long-term.

Strategy 2: Increase Rooftop Solar for Homes and Businesses

Problem: Golden cannot meet its 100% renewable energy goal by 2050 at its current pace of private investment. As of 2020, less than 3% of the community’s energy usage comes from renewable energy produced within the city. As concluded in the 2012 Renewable Energy Technical Advisory Committee final report, solar photovoltaic systems (PV) offer the largest potential of all available renewable technologies within the City boundaries and as such, the Board’s focus has been on increasing investment and use of PV systems.

Intent: While utility-scale solar is becoming more widely used, on-site renewable energy is a key component of making progress toward high performing or net zero buildings. Adopted in 2019 through Ordinance No. 2097, solar is a requirement for all new multi-family and commercial projects constructed in the City of Golden.

- 2.1 Additional rebates and incentives for residential solar.
- 2.2 Discounts for homeowners and businesses through bulk purchases by the City.
- 2.3 Requiring solar for all new single family residential construction.
- 2.4 Requiring solar for major renovations of homes and businesses.
- 2.5 Identify ideal roofs with mapping and incentivize installations.

Potential Metrics:

- Kwh produced by renewable energy by City and percentage of total kWh used within City.
- Number of Net-zero buildings within City and percentage of total number of buildings
- Number of newly constructed buildings within City with solar and total number of newly constructed buildings.
- Number of major renovated buildings within City with solar and total number of major renovated buildings.



- Number of buildings in City with solar and percentage of total number of buildings
- Number of ideal rooftops in Golden with solar installations and total number of ideal rooftops for solar installations

Timeline for Evaluation: Near- and long-term.

### Strategy 3: Use Microgrids to Increase Golden's Energy Independence and Resiliency

Problem: Golden is primarily dependent on the existing energy grid infrastructure that has been in place for decades and is also susceptible to potential negative impacts to the energy grid. As our climate changes or we experience future natural disasters, we may experience brown outs, periods of reduced availability of energy, and/or higher energy rates.

Intent: To increase energy independence through technologies that can reduce our community's risk and increase our resilience against disrupting events.

- 3.1 City investment in microgrid technology for the direct benefit of Golden residents and businesses.
- 3.2 Political advocacy at the state and federal level to allow these technologies and power agreements.

Potential Metrics:

- Kwh produced by renewable energy by City and percentage of total kWh used within City.
- Number of brownouts.
- Energy costs.

Timeline for Evaluation: Near- and long-term (ongoing).

### Strategy 4: Large Scale Renewable Energy Deployment

Problem: Microgrids in Golden are insufficient to cover the total energy needs within the City. A diverse portfolio of renewable energy sources is needed for the City create a sufficient, resilient and continuous supply of renewable energy minimizing storage capacity needed.

Intent: To take advantage of economies of scale for optimal financial terms, large scale renewables such as solar gardens, wind and solar projects outside city limits.

- 4.1 Seek innovative partnerships and energy purchase agreements with suitable partners.
- 4.2 Negotiate and construct one or more solar gardens.
- 4.3 Negotiate power service agreements with utility providers.

Potential Metrics:

- Kwh produced by renewable energy by City-owned solar gardens.

- Kwh supplied to Golden through renewable energy purchase agreements and utility provider power service agreements.

Timeline for Evaluation: Near- and long-term (ongoing).

## **Goal 1.2: To achieve 100% renewable energy for heating by 2050.**

### Strategy 5: Natural Gas Reduction

Problem: In order to meet Golden's 100% renewable energy for heating goal by 2050, we will need to transition away from natural gas (a fossil fuel) toward electricity.

Intent: To replace gas-powered appliances with electric appliances and then to offset electricity usage with renewable energy.

- 5.1 Revise building codes to phase in alternatives to natural gas technologies in public buildings, new construction and existing buildings.
- 5.2 Stronger building codes to achieve higher energy efficiency of existing and new buildings (insulation, windows, thermal envelopes, etc.).
- 5.3 Replacement of new gas-powered appliances with alternatives powered by renewable energy. Phase out gas-powered appliances in homes and businesses.

Potential Metrics:

- Therms of natural gas used within City and by sector per year.
- Number of buildings detached from natural gas (and converted uses to renewable energy) and percent of all buildings in Golden.

Timeline for Evaluation: Near- and long-term (ongoing).

## **Goal 1.3: To align Greenhouse Gas Emission reductions with the Paris Accord by 2050.**

### Strategy 6: Greenhouse Gas Inventory Updates

Problem: In order to meet the City's greenhouse gas reduction goals, emissions need to be recorded in parallel with renewable energy objectives to identify unnoticed and unintended consequences.

Intent: To maintain a City-wide inventory of greenhouse gas emissions by sources that is periodically updated.

- 6.1 Update the greenhouse gas inventory for the City at minimum every 5 years and assess steps needed to maintain City on track with reduction goals per Paris Accord by 2050.

Potential Metrics:

- Greenhouse gas emissions by City per year

Timeline for Evaluation: Near- and long-term (ongoing).

**Goal 2.1: To reduce consumption of electricity by 15% by 2030.**

Strategy 7: Reduce Electricity Consumption

Problem: In addition to converting from fossil to renewable energy sources, the City needs to reduce its overall electricity consumption.

Intent: Increase the electricity efficiency of users by 15% based on 2019 baseline conditions by 2030.

- 7.1 Stronger building codes to achieve higher energy efficiency of existing and new buildings (insulation, windows, thermal envelopes, etc.).
- 7.2 Education and training of HVAC installers and other mechanical, electrical, or plumbing systems to increase awareness of electric-based technology.
- 7.3 Evaluate the city's streetlight system and night time lighting ordinances for opportunities to reduce lighting where safely possible.

Potential Metrics:

- kWh used by sector (residential, public, businesses) per year

Timeline for Evaluation: Long-term.

**Goal 2.2: To reduce consumption of natural gas by 15% by 2030.**

Strategy 8: Energy Efficiency Resources for Commercial Users

Problem: Commercial businesses consume 75% of Golden's community energy consumption. Meeting Golden's energy efficiency and renewable energy goals cannot be achieved without strong partnerships with Golden commercial and industrial businesses.

Intent: To provide tools and resources needed by Golden businesses that can help improve energy efficiency and increase investment in renewable energy.

- 8.1 Provide businesses with design and technical assistance to plan for long range upgrades and facility improvements.
- 8.2 Research financial assistance such as matching rebates for existing utility incentives.
- 8.3 Require energy performance milestones for improvements and upgrades with consideration for financial ability.
- 8.4 Commercial Energy Benchmarking Program. Propose a benchmarking ordinance for commercial and industrial customers to report on their facility's gas and electricity usage each year. Studies show that simply understanding your utility bills incentivizes people to conserve energy.

Potential Metrics:

- Therms used per commercial and industrial customer in City per year.
- kWh used per commercial and industrial customer in City per year.

Timeline for Evaluation: Near-and long-term.

Strategy 9: Energy Efficiency Resources for Residential, Institutional, and Public Users

Problem: Meeting Golden's energy efficiency and renewable energy goals will be accelerated with higher energy efficiency practiced for public, institutional, and residential customers.

Intent: To provide tools and resources by the public, institutional, and residential sector that can help improve energy efficiency.

- 9.1 Develop materials and recommendations for pertinent public education.
- 9.2 Revise and enforce code requirement that aim to increase energy efficiency in public and residential buildings.

Potential Metrics:

- Therms used per residential, institutional, and public customer in City per year.
- kWh used per residential, institutional, and public customer in City per year.

Timeline for Evaluation: Near-and long-term.

**Goal 3.1: To achieve 20% fossil fuel-free transportation sector by 2030 and 100% fossil fuel-free transportation sector by 2050.**

Strategy 10: Electrifying Transportation

Problem: Golden cannot achieve its Golden's 100% fossil fuel free transportation by 2050 goal with traditional gas-powered vehicles such as unleaded gas and diesel fuels.

Intent: Phase out fossil fuels and phase in alternatively powered transportation.

- 2.1 City investment in electric vehicles and a plan to transition toward fuel provided by renewable energies; improve charging infrastructure and promote education. Expanded access to public electric vehicle charging stations.
- 2.2 Political advocacy by Golden to support RTD and CDOT electric fleets.
- 2.3 Fleet vehicles (company fleets, municipal fleets, taxis, car share).
- 2.4 Requiring charging stations in new homes and businesses.
- 2.5 Adding charging stations to existing commercial parking lots and multifamily complexes.

Potential Metrics:

- Number of fossil-fuel based vehicle miles traveled in City boundaries per year
- Number of fossil free miles traveled by transportation sector in City boundaries per year
- Number of fossil-free vehicles owned within City limits
- Number of total vehicles owned within City limits

Timeline for Evaluation: Near- and long-term.

Thank you to Golden residents, businesses, students and citizens who offered ideas and suggestions. These ideas, collected from the Golden community throughout 2018-2019, will be analyzed and considered by the Board, in addition to the key strategies listed above.

- |                            |                                     |                                       |
|----------------------------|-------------------------------------|---------------------------------------|
| • Carbon sequestration     | • Carbon Neutral                    | • Smart Grid                          |
| • City owned utilities     | • Meet Paris Accord Goals           | • Alternative Transportation Strategy |
| • Water conservation       | • Wind Partnerships                 | • Vertical Wind Turbine               |
| • Clear Creek hydro        | • Community Solar Garden            | • Renewable Energy Incentives         |
| • Free EV Parking          | • New-Building EV Charging Stations | • Zero Fossil Fuel Dependence         |
| • Waterless toilets        | • Energy Advisor Program            | • Distributed Generation              |
| • Solar shingles           | • Energy Benchmarking               | • Virtual Net Metering                |
| • Universal transit app    | • Energy From Waste                 |                                       |
| • Control streetlights     | • Electric City Vehicle Fleet       |                                       |
| • Wind energy              | • CFL/LED Light Bulbs               |                                       |
| • Clear Creek Hydro Energy | • Zero-car Households               |                                       |
| • New Building Solar Power |                                     |                                       |

The Board continually seeks potential partners in these areas, including industry and educational professionals from Colorado School of Mines, Jefferson County R-1 school district and retired industry professionals.

# WASTE

## *Vision*

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Golden will work to protect regional waste capacity and insulate against higher costs through diversion of multiple waste streams from landfills. It is in our community's best interest to minimize our contribution to the landfill and help to extend its life. Collectively, the city will work together to reduce the overall volume of waste and advocate for manufacturing of products made from recyclable or compostable materials.

## *Goals*

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To reduce total landfill contribution by 40% by 2030. This means:

**Goal 1: Recycle 80% of recyclables by 2030.**

**Goal 2: Compost 80% of compostables by 2030.**

**Goal 3: Reduce total trash by 20% by 2030.**

**Goal 4: Strive for zero waste in municipal operations by 2030.**

## *Strategies*

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**Goal 1: Recycle 80% of recyclables by 2030.**

### Strategy 1: Increase Recycling Access to All Multifamily and Commercial Buildings

**Problem:** Not everyone can recycle in Golden. Some landlords, property managers, and business owners choose to forgo recycling services due to cost, lack of space, or disinterest.

**Intent:** Access to recycling services is an equity issue and one that we should strive to provide for everyone, not just those in single family areas. Increase recycling of recyclables by 2030 to 80% based on the 2019 baseline conditions. This effort addresses all land use sectors. These may require changes to the City's parking ordinance, dumpster enclosure ordinance and a multi-year timeline for implementation.

- 1.1 Providing recycling access to all multi-family (dorms, apartments, condos).
- 1.2 Providing recycling access to all commercial areas (offices, restaurants, retailers, and industrial).

**Potential Metrics:**

- Number of multifamily and commercial buildings offering recycle access and percentage of all multifamily and commercial buildings
- Total amount of recycle material diverted by multifamily and commercial buildings

Timeline for Evaluation: Near- and long-term.

### Strategy 2: Increase Citywide Recycling

Problem: We cannot achieve our waste diversion goal of 80% by 2030 through only the current residential recycling program.

Intent: Recycling should be available in other public areas. We should expand recycling into other areas such as downtown for visitors, public services, institutions, downtown businesses, and in all city parks.

Funding will be required to replace and add recycling bins in downtown and in all city parks. In addition, the City needs to take a leadership role in solving the downtown issues that currently prevent more businesses from recycling (space limitations, hauling operations and costs to businesses.)

- 2.1 Provide additional recycling bins in downtown for visitors.
- 2.2 Add recycling bins to all city parks.
- 2.3 Solve recycling challenges and provide service to all businesses in Downtown Golden.

Potential Metrics:

- Amount of recyclable materials diverted to beneficial reuse in city parks
- Amount of recyclable materials diverted to beneficial reuse in downtown Golden

Timeline for Evaluation: Near- and long-term.

## **Goal 2: Compost 80% of compostables by 2030.**

### Strategy 3: Compost Service Citywide

Problem: Currently, curbside compost services is only available to single family households and businesses who pay for the additional service. We will not be able to achieve our 80% diversion target for all compostable material with the current services.

Intent: Provide access to curbside compost services to all citizens, including residents in apartment or condos and to those visiting Golden businesses. Deploy compost services throughout municipal operations. Increase composting of compostables by 2030 to 80% based on the 2019 baseline conditions. Similar to the ordinance changes needed to widen access to recycling services, expanding compost would require comparable strategies.

- 3.1 Add compost service as an included service (and as a third stream) in the City's residential program.
- 3.2 Incentivize and strengthen the existing compost service for businesses.
- 3.3 Mandate waste haulers to include compost service for all businesses.

Implement composting of materials associated with all City's services (e.g. parks and recreation).

Potential Metrics:

- Amount of compostable materials diverted to beneficial reuse City wide and percent of total compostable material produced.
- Number of residents, businesses, institutions, and public services participating in the compost program.

Timeline for Evaluation: Near- and long-term.

**Goal 3: Reduce total trash by 20% by 2030.**

Strategy 4: Reduce Single Use or Non-Recyclable Plastics

Problem: Single use plastics contribute a significant amount of volume in the waste stream and environmental and human health contamination by microplastics has become a recognized threat.

Intent: To limit the use of items that cannot be recycled locally, through bans or fees of undesirable products. Reduce industry reliance and encourage behavior change to reuse items and reduce the use of single use disposables. The City seeks partners for collaboration, including businesses who may be affected by the reduction of their use. Strategies to be considered include:

- 4.1 A ban on plastic shopping bags.
- 4.2 Fees for plastic shopping bags.
- 4.3 A ban on plastic straws.
- 4.4 A ban on items that cannot be recycled locally such as non-recyclable takeout containers & utensils.
- 4.5 A ban single use water bottles and plastic containers & utensils at city events.
- 4.6 A requirement that all single use takeout containers be compostable.
- 4.7 Support quality recycle material streams that allow recyclability and end up in the U.S.

Potential Metrics:

- The number of stores, restaurants, and other businesses participating in City programs to limit and avoid the use of single-use plastics.

Timeline for Evaluation: Near- and long-term.

**Goal 4: Strive for zero waste in municipal operations by 2030.**

Strategy 5: Strive toward Zero Waste Events, Meetings, City Operations, and Facilities.



Intent: Aim to achieve Zero Waste throughout municipal operations and position the City as a leader in modeling waste reduction and diversion through integrating zero waste policies into city-sponsored events, meetings and in city facilities.

- 5.1 Procurement of exclusively recyclable and compostable materials for all City-related operations.
- 5.2 Requirement for all vendors participating in City-sponsored events to use exclusively recyclable and compostable materials.

Potential Metrics:

- Amount of landfilled waste produced by City events, meetings, City operations, and facilities.

Timeline for Evaluation: Near- and long-term (ongoing).

Thank you to Golden residents, businesses, students and citizens who offered ideas and suggestions. These ideas, collected from the Golden community throughout 2018-2019, will be analyzed and considered by the Board, in addition to the priorities listed above.

- Curbside Recycling/Compost For All
- Increase Curbside Waste Streams
- Public Properties Zero Waste Policy
- Divert Construction Waste.
- Commercial Food Waste Diversion
- Post-industrial Waste Solutions
- Reduce Plastic Bags
- Ban non-compostable Fast Food
- Adjust trash/recycling pick up to fit usage
- Ban Disposable Bags/Straws Styrofoam
- Tool/Product Exchange
- Minimalism
- Support neighboring jurisdictions in the creation of an organics transfer station.
- Establish a local packaging policy addressing take out containers, plastic bags, and single use water bottles
- Support regional business who use recycled materials
- Engage with the state legislative processes to support greater diversion and to establish end processing operations within Colorado
- Support State Goals
- Repair/Reuse/ Donation Opportunities.
- Integrated composting and agricultural cycle
- Composting Incentives
- Restaurant BYO Utensils Discount
- Recycling Incentives
- Universal PAYT for all

# WATER

## *Vision*

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In a semi-arid desert climate, water resources are important to our individual households, as a utility provider to the Golden community and to our region. Sustainable water use means conservation, adherence to high quality water, and preservation of ecosystem health of our water habitats.

## *Goals*

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### Goal 1: Responsible Use.

To reduce per capita total water use in Golden by at least 15% by 2030.

### Goal 2: Drought Planning.

To develop a resiliency plan by 2020 to prepare for a time where Golden's and Colorado's climate may be substantially warmer and drier than it is today.

### Goal 3: Resource Recovery.

Goal 3.1: To develop and implement a plan by 2020 where Golden's surplus water is used effectively not only to manage the cost of water and sewer services, but to enhance the environment in Golden and elsewhere in our watershed.

Goal 3.2: To recover resources from the city's wastewater by 2030.

## *Strategies*

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### Goal 1: To reduce per capita total water use in Golden by at least 15% by 2030.

#### Strategy 1: Reducing Outdoor Irrigation

Problem: Golden's water conservation goal of reducing per capita total water use by at least 15% by 2030 cannot be achieved through only indoor water conservation because opportunities for conservation in indoor use is limited.

Outdoor water conservation is Golden's biggest opportunity to make significant progress toward the goals.

Intent: To focus programs on all aspects of outdoor irrigation and reuse.

- 1.1 Incentives to help with residential irrigation repair and upgrades.
- 1.2 Providing smart irrigation technology to residents.

- 1.3 Incentives to convert grass to xeric landscaping.
- 1.4 Increasing the use of xeric plants in city parks, including the reduction of grass in appropriate areas.
- 1.5 Continued works with City to establish water incentive programs for commercial and institutional outdoor water savings.

Potential Metrics:

- Total outdoor water consumption by residents within City.
- Acres of water intensive grass converted to Xeriscape in public, private and residential areas.

Timeline for Evaluation: Near- and long-term.

### Strategy 2: Conserving Indoor Water Use

Problem: Golden's indoor water use has been steadily decreasing over the past several years, primarily due to higher efficiency fixtures (sink aerators, high efficiency toilets, front loading washing machines, low flow shower heads, etc.) but opportunities for additional conservation remain. One challenge is of a technical nature at Golden's water treatment plant which requires new design and construction projects to resolve.

Intent: To identify and remove barriers of a technical nature to allow more opportunities for indoor water conservation

- 2.1 Resolve existing infrastructure limitations in homes and businesses through funding additional research and/or incentives.
- 2.2 Overcome any infrastructure limitations as needed to accommodate water conservation goals.

Potential Metrics:

- Total indoor water consumption by all sectors within City (residential, commercial, institutional, public).

Timeline for Evaluation: Near- and long-term (ongoing).

### Strategy 3: Water Reuse as Conservation

Problem: Water that we use in outdoor irrigation is treated to drinking water standards, which include costs for treatment and delivery to our homes. The potential for water reuse in making progress toward the City's 15% conservation goals a relevant contribution. Every gallon used that does not need to be treated and can be reused onsite represents savings in terms water, cost, chemicals, and energy spent.

Intent: To pursue water reuse programs and policies and evaluate their potential in making progress toward our community goals.

- 3.1 A graywater ordinance program to allow and promote residential owners to install water reuse equipment such as "Laundry to Landscape."
- 3.2 A graywater ordinance program to allow commercial and multifamily areas to install water reuse equipment.
- 3.3 An ordinance program that requires reuse infrastructure for new construction or significant modifications in Golden.

Potential Metrics:

- Total amount of water recycled by residential, commercial and multi-family users
- Total number of water recycle installations in residential, commercial and multi-family buildings

Timeline for Evaluation: Near- and long-term (ongoing).

**Goal 2: To develop a resiliency plan by 2020 to prepare for a time where Golden's and Colorado's climate may be substantially warmer and drier than it is today.**

Strategy 4: Water Resilience and Public Education

Problem: Golden has ample water supplies to provide for now and in the future, but like other communities, is susceptible to changes in climate and impacts from natural disasters (flood, fires, drought, etc).

Intent: To create a plan for water resiliency that can reduce our risk against future climate conditions and allow Golden to recover quickly from unexpected disasters.

- 4.1 Drought planning that incorporates information from climate change studies and plans for resiliency.
- 4.2 Exhibitions, information and broader public outreach about planning for future supply and recovery from natural disasters

Potential Metrics:

- Percentage of the total customer population at risk of experiencing severe restrictions during drought conditions.

Timeline for Evaluation: Long-term.

**Goal 3.1: To develop and implement a plan by 2020 where Golden's surplus water is used effectively not only to manage the cost of water and sewer services, but to enhance the environment in Golden and elsewhere in our watershed.**

Strategy 5: Identify any potential opportunities and continue to administer water resources in an efficient and sustainable manner.

Timeline for Evaluation: Long-term.

### Goal 3.2: To recover resources from the city's wastewater by 2030.

#### Strategy 1: Water Resource Recovery

Problem: Wastewater contains various resources that are currently either not at all recovered by the City or only to a limited extent.

Intent: To evaluate and pursue opportunities to increase the recovery of resources from municipal wastewater.

- 1.1 Quantify the energy that can be cost-effectively recovered from Golden's wastewater (thermal, chemical, and hydraulic).
- 1.2 Quantify the nutrients that can be cost-effectively recovered from wastewater (phosphorus and nitrogen).
- 1.3 Assess the feasibility of urine separation for recovery of ammonia as a fertilizer.
- 1.4 Expand feasible opportunities for the recovery of water for beneficial reuse.

Potential Metrics:

- Amount of water, nutrients, and energy recovered from Golden's wastewater.

Timeline for Evaluation: Long-term.

Thank you to Golden residents, businesses, students and citizens who offered ideas and suggestions. These ideas, collected from the Golden community throughout 2018-2019, will be analyzed and considered by the Board, in addition to the priorities listed above.

- |   |                             |                               |
|---|-----------------------------|-------------------------------|
| • Expand AquaHawk                         | • Grey Water                | • Xeric Lawn Contest          |
| • Tiered Pricing                          | • Watering Restrictions     | • Garden In A Box Signage     |
| • Monthly billing                         | • Weather Normalization     | • Xeric Yard Makeover Contest |
| • Low Water Sprinkler System Technologies | • Water Food, Not Grass     | • Raw Water Uses              |
| • Rain Capture                            | • Xeric Landscaping         |                               |
|   | • Rachio Weather Technology |                               |

The Board continually seeks potential partners in these areas, including industry and educational professionals from Colorado School of Mines, Jefferson County R-1 school district and retired industry professionals.

## Additional Integrated Goal Areas

### Public Health

It is important to recognize that public health is an important component of sustainability and needs to be highlighted and addressed within each goal. Below are a list of examples:

- Energy: building materials, home insulation, clean air – transportation, pollution
- Water: access to clean water
- Waste: Hygienic practices for collection and handling of waste and recycled resources

Further research and evaluation of public health, may lead to development of additional goals and strategies to address sustainability outside the energy, waste, and water goals in the following areas:

- Access to healthy, clean food
- Access to outdoor space/green space
- Access to physical activity
- Access to healthcare which includes behavioral health services
- Health education and promotion
- Tobacco and marijuana usage and policies

There are various other community organizations working on these topics. The CSAB plans to collaborate and partner with these organizations to better understand problems and identify effective solutions and strategies to address sustainability in these areas.

### Food

It is important to recognize that the food system is an important component of sustainability on a global and local and needs to be highlighted and addressed within each goal, which may include consideration of the following:

- Energy: food production, transportation, and distribution, energy recovery from food waste
- Waste: Packaging, residential and commercial food waste management
- Water: water usage in food production, pesticide usage-impact on soil and run off

There are various community organizations working on these topics. The CSAB plans to collaborate and partner with these organizations to better understand the problem and identify effective solutions and strategies to address sustainability in these areas.

# Appendices

## Appendix A: Community Metrics

City of Golden Energy Metrics (proposed)

Municipal EUI per sf	(kBtu/square foot/year)	Utility Grid Mix	%
total COG buildings sf		Coal	
Community EUI per sf		Gas	
total community buildings sf		Wind	
Total EUI	(multifamily, commercial)	Hydro	
		Solar	
		Nuclear	
		Bio Mass	
		Other	

Consumption			
Electricity	customers	kWh	
Residential			
Business			
Municipal			
Street Lighting metered			
Street Lighting non metered (COG)			
Street Lighting non metered (Xcel)			
Electric total			
Natural Gas	customers	therms	
Residential			
Commercial			
Gas total			
Transportation			
Municipal			
Regional fleets used in Golden			
Private			
Transportation total			
Consumption Total			

Production			
	customers	total capacity (kW)	generation (kWh)
Solar Residential			
Solar Commercial			
Solar Garden			
Windsource			
Hydroelectric			
Solar Total			

Efficiency	customers	kW savings	kWh savings	therms savings
Residential				
Commercial				
Efficiency total				

Utility Grid Mix	%
Coal	
Gas	
Wind	
Hydro	
Solar	
Nuclear	
Bio Mass	
Other	

### Methodologies

### Assumptions

Commercial means multi-family, commercial and industrial utility meters or consumption

### City of Golden Community Waste Diversion Metrics (proposed)

Recyclables	
Residential Curbside Recycling	Tons
Single stream	
Multifamily & Commercial Recycling	
Commercial single-stream	
Multi-family single-stream	
Multi-family & commercial Total	
Other	
Community Pride Days	
Electronics	
Tires	
Mattresses	
Metal	
Paper (shredded)	
Rooney Road Household Hazardous Waste	
Golden contribution	
Paint	
HHW	
Electronics	
Total Other	
Total MSW Recycling Tons	
Industrial Recyclables	
Scrap metal (ferrous) iron, steel	
Concrete	
Asphalt	
Total Industrial Recyclables Tons	
Total Recycling Tons	

Organics	
Residential & Commercial collection	Tons
Food Waste (residential)	
Food Waste (commercial)	
Yard Waste (residential)	
Yard Waste (commercial)	
Construction & Demolition	
Total Organics	

Landfill	
Solid Waste Landfilled	Tons
Residential	
Multi-family	
Commercial	
Industrial	
Alternative Daily Cover	
Total landfill Tons	

Recycling Participation	
Residential	% of customers
Residential Compost	
Multi-family	
Commercial	
Industrial	
Total customers with recycling	

MSW totals	Residential	Commercial	Industrial	Overall	Lbs/pp/day
Total landfill					
Total Compost					
Total Recycling					
Total ADC					
Total Disposed					
Diversion Rate					
Combined Totals					

Miscellaneous	
Pharmaceuticals	lbs/person/year
Golden population	
# of businesses	



## City of Golden Water Conservation Metrics (proposed)

<b>Residential (gallons)</b> # of customers Total Residential consumption	consumption per household indoor versus outdoor per household Gallons per day, per capita consumption per business Water Conservation programs # of Irrigation Audits # of Gardens in A Box # of Xeriscape seminar attendees total gallons treated total diverted acre feet mtCO2 equivalent (GHG)
<b>Multifamily</b> # of accounts population Total Multifamily consumption	
<b>Commercial &amp; Industrial</b> # of accounts Total Commercial consumption	
<b>Irrigation</b> # of accounts Total Irrigation consumption	
<b>Nonpotable</b> # of accounts Total Nonpotable consumption	
<b>Raw Water</b> # of accounts Total Raw Water diverted	
<b>Water Treatment Plant data</b> kWh per mgd treated GHG equivalent per mgd DW and WW treated Municipal Use	<b>Data Needs</b> Commercial category includes Multifamily and Commercial; needs to include further separation.  Commercial category includes some businesses with irrigation and some without.

### Methodologies

Total diverted means water taken out of the river

Total treated means the amount of water leaving the water treatment plant

non-potable means water used for irrigation that is not treated

### Assumptions

Totals are in calendar years

Efficiency calculation is exclusive of all non-potable golf course water

Efficiency calculation includes all water leaving the plant divided by billed water

Water leaving the plant includes treated consumption, parks non-potable water, CSM, Lookout Mountain School,

GHS, Jeffco soccer fields at 12th & Ulysses, cemetery

Local weather stations are used to collect weather data, including rainfall

An irrigation system efficiency of 75 percent, which is considered efficient by industry standards (per Denver Water)

An irrigation season of April 15 through Oct. 15

Historical irrigation requirements from 2003 to 2008 in the Denver area was 18 gallons per square foot (GPSF) and actual for 2017 was 21 gpsf per Denver Water

118 GE Sustain

### RESOLUTION NO. 2656

#### A RESOLUTION OF THE GOLDEN CITY COUNCIL REVISING THE EXISTING CITY OF GOLDEN SUSTAINABILITY GOALS AND SETTING NEW TARGETS

WHEREAS, the Golden City Council enacted the Golden Sustainability Goals through Resolution No. 1793 in 2007 and amended by Resolution No. 2330 in 2014 in recognition of the current threat to our environment and resolved to place Golden in the forefront of global communities willing to do their part to help make a difference; and

WHEREAS, since 2007 the city has created the Community Sustainability Advisory Board (CSAB), seated several task forces to provide research and direction, made significant investments in energy and resource conservation, and has implemented numerous sustainability programs and policies toward the goals; and

WHEREAS, after reviewing the progress made to date over the past eleven years, CSAB proposes changes to reflect the achievement of some goals, the inclusion of additional goals, and the acknowledgement of many recent new data, technologies and innovation; and

WHEREAS, the Golden City Council endorsed the Paris Climate Accords goals in 2017 and would like to better align Golden's Sustainability Goals with the Paris Accords'.

THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF GOLDEN, COLORADO:

Section 1. Golden intends to meet the following Sustainability Goals:

**A. Energy.**

- 1) Renewables. To achieve 100% renewable energy for electricity by 2030 and 100% renewable for heating by 2050. To align Greenhouse Gas Emission reductions with the Paris Accord by 2050.
- 2) Efficiency. To reduce consumption of electricity by 15% by 2030 and reduce consumption of natural gas by 15% by 2030.
- 3) Transportation. To achieve 20% fossil fuel-free transportation sector by 2030 and 100% fossil fuel-free transportation sector by 2050.

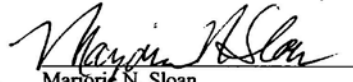
**B. Waste.** To reduce total landfill contribution by 40% by 2030. This means:

- 1) Recycle 80% of recyclables by 2030.
- 2) Compost 80% of compostables by 2030.
- 3) Reduce total trash by 20% by 2030.
- 4) Strive for zero waste in municipal operations by 2030.

**C. Water.**

- 1) Responsible Use. To reduce per capita total water use in Golden by at least 15% by 2030.
- 2) Drought Planning. To develop a resiliency plan by 2020 to prepare for a time where Golden's and Colorado's climate may be substantially warmer and drier than it is today.
- 3) Resource Recovery. To develop and implement a plan by 2020 where Golden's surplus water is used effectively not only to manage the cost of water and sewer services, but to enhance the environment in Golden and elsewhere in our watershed. And to recover resources from the city's wastewater by 2030.

Adopted this 14<sup>th</sup> day of February, 2019.

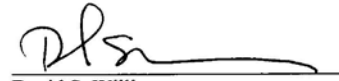
  
Marjorie N. Sloan  
Mayor

ATTEST:

  
Monica Mendoza, CMC  
City Clerk



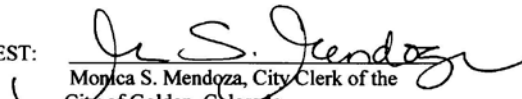
APPROVED AS TO FORM:

  
David S. Williamson  
City Attorney

I, Monica S. Mendoza, City Clerk of the City of Golden, Colorado, do hereby certify that the foregoing is a true copy of a certain Resolution adopted by the City Council of the City of Golden, Colorado at a regular business meeting thereof held on the 14<sup>th</sup> day of February, 2019.



ATTEST:

  
Monica S. Mendoza, City Clerk of the  
City of Golden, Colorado

## *Appendix C: Past Initiatives and Accomplishments*

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### **History**

In 2006, the Golden Sustainability Initiative began with over 200 residents who attended the first sustainability open house on a cold and snowy night. After four months of work, the recommendations of seven community working groups were adopted by City Council in 2007. The Community Sustainability Advisory Board (CSAB) was created and seated by City Council in 2007 (Ordinance No. 1789). The goals were subsequently amended in 2014 (Resolution No. 2330) and in 2019 (Resolution No. 2656). Each year, several projects and policies were completed:

2006: Community Open House, 7 working groups seated

2007: Goals adopted, Municipal baseline created

2008: CSAB seated, coordinator hired

2009: First Energy performance contract

2010: First Sustainability Strategic Plan adopted; Pay-As-You-Throw program created

2011: Green building codes adopted; LEED for city buildings policy adopted.

2012: Renewable Energy Technical Advisory Committee report published

2013: Second energy performance contract; Goals updated; West Line Light Rail opens

2014: Municipal solar projects constructed: seven net-zero buildings

2015: Voluntary residential compost program created; first public electric vehicle charging stations installed

2016: Golden Bike Library launches

2017: Golden voters approve Community Solar Garden; Paris Accord adopted

2018: Community Outreach to revise goals;

2019: New goals adopted

The current set of ten sustainability goals over three topic areas form the basis for this Sustainability Strategic Plan. Under the leadership of the Golden City Council and with support from the Community Sustainability Advisory Board and participation by citizens, the City has made a long-term commitment to sustainability and environmental stewardship. With the adopted goals, Golden recognizes both the operational challenges and opportunities that it will face in upcoming years. Nevertheless, Golden is committed to creating a set of governmental and community policies, metrics, and benchmarks that will assure that the community, businesses and residents are able to take proactive steps to meet ongoing challenges as well as capitalize on new opportunities. The City of Golden recognizes that it will obtain significant economic, social, and environmental benefits through successful integration of sustainability into our operations, investments, and day-to-day living.

In 2010, the Board adopted the first City of Golden Sustainability Strategic Plan, which outlined a plan of action using the strategies within Golden Sustainability Initiative Working Group recommendations and actions that Board members proposed through their own areas of expertise. Forty-eight specific strategies across the seven goal areas were defined in the 2010 version. While some projects did not make sense to implement, the Board researched each one and took action on more than 80% of the strategies.

The 2015 Sustainability Strategic Plan identified additional strategies that were brought to the public and City Council for consideration. The 2015 Plan incorporated public input with a stronger focus of community benefit in making recommendations. It is with similar intention and purpose that this current version incorporates more than a year of community input through comments, participation and surveys and is comprehensive in its list of ideas that Golden should pursue. The Board is committed to a transparent and thorough process of analysis for each of the projects with consideration for the economic, social and environmental impacts.



## CITY OF GOLDEN SUSTAINABILITY INITIATIVE

### ENERGY PROGRAMS

**Solar Incentives.** First in 2009-2010 and again in 2019-2020, the City has waived or will rebate all permit fees for residential solar systems. The City also achieved high designations as a Solar Friendly Community and a SolSmart Community for efforts to streamline the permitting process and reduce costs to homeowners and businesses.



**Community Solar.** In 2017, Golden residents voted 81% to construct a community solar project at the old Rooney Road landfill site. Over the past year, staff and CSAB have been conducting cost benefit analysis for feasibility, economic viability, and seeking to maximize the benefit for Golden subscribers. In parallel, an analysis for a second site is now underway with the hopes of diversifying a community renewable energy portfolio for Golden.

**High Performing Buildings.** Since 2010, Golden has adopted green building standards, beyond the standard base building codes, aimed at increasing the energy performance of new and existing buildings. These include:

- Adopting the latest versions of the International Building Codes, currently Golden uses the 2018 I-codes.
- The Sustainability Menu, which requires developers to choose from a variety of green building best practices in order to build in Golden.
- Mandatory electric vehicle charging stations in new commercial and multifamily construction (adopted January 2019).
- Mandatory solar photovoltaic rooftop systems in new commercial and multifamily construction (adopted January 2019).



**Hydroelectric.** In 2019, a feasibility study was completed to assess Golden's hydro potential. Our water comes from high mountain areas which produce opportunities to use gravity as a renewable resource to generate electricity. Of the City's 3 reservoirs, Lower Urad Reservoir has the most promising potential for a turbine. Next steps are to wait for favorable economic conditions to complete design and pursue a cost effective project.

**CPACE.** The Colorado Property Assessed Clean Energy program provides loans to businesses for making energy efficiency and renewable energy investments. Loans are paid off through annual property taxes, making the immediate improvements both simple and affordable.





**Energy Advisor Programs.** The City has tested out various initiatives since 2007, including subsidies for home energy audits, radon mitigation grants, promoting rebates for home energy projects, and a residential energy guide and handbook to net zero.

**Community Grants.** Over the past decade, Golden has offered funds for solar projects, energy efficiency efforts, installation of LED lighting, and electric vehicle charging stations for businesses. Golden also provides funding to improve energy efficiency of low income housing and partners with community nonprofits such as the Be A Tool and Habitat for Humanity organizations.



**Streetlight LED program.** Golden is the FIRST community to purchase the entire streetlight infrastructure from its utility provider, Xcel Energy. Public ownership of streetlights will help us control costs, upgrade fixtures to efficient LEDs and implement smart technology to meter and control lighting to avoid light pollution.

**Wind Energy.** While studies show that Golden is not situated for optimal large scale energy generation from wind turbines, the City has partnered with Colorado School of Mines and NREL to study the potential of small wind for businesses.



**Alternative Transportation.** Getting folks out of their cars is one way to reduce vehicle miles traveled. Transportation is also a large portion of our energy use, so Golden's latest goals aim to electrify all transportation by 2050. Golden's effort to date is significant and includes:

- RTD West Line Light Rail
- Golden Bike Library
- VIP Bike parking at Special Events
- Bike To Work Day
- The Green Bus, aka, RTD's Call & Ride bus around Golden.
- Electric Vehicle Charging Stations installed through State grant funds (20+ and counting)
- Walk and Bike path improvements





## WASTE PROGRAMS

**Pay-As-You-Throw Program.** After a two-year community outreach effort, Golden implemented a single hauler program for most residential areas with trash and recycling service. Average pricing for households went from \$22 to \$8.50. Over the years, Golden has worked to keep costs low while adding services such as compost and appliance recycling. Now, more than 80% of Golden's single family households participate and several homeowner association groups have voluntarily joined the program. In 2011, Golden's program was recognized as Outstanding Government Diversion Program by the Colorado Association for Recycling and Sustainability Champion for Medium Organizations by CDPHE and CORE.



**Community Pride Days.** An annual event held for more than 20 years, Golden's Community Pride Days accepts garbage, but aspires to divert recyclables that include electronics, tires, metal, mattresses, and paper shredding. More than 200,000 pounds of recyclables are kept out of the local Foothills Landfill each year through this two day event.

**Special Event Recycling & Compost.** Since 2009, the City has worked toward increasing waste diversion at large community events such as the 4<sup>th</sup> of July and Buffalo Bill Days. 2019 was the most successful year so far, with several events diverting food waste and using compostable products.



**Residential Compost Program.** Started in 2010, the City contracts with a waste hauler to provide waste, recycling, and compost services for most single family areas. Every five years, the program is rebid to keep prices low and the City continues to add valuable programs such as city-wide compost collection and appliance recycling. More than 550 households participate in this voluntary program.

**Asphalt & Concrete Recycling.** More than 3,000 tons of roads and sidewalks are crushed and reused annually in the City's replacement program. One of the only municipal road recycling programs in our region, this City program diverts a significant amount of waste away from the local landfill.







**Downtown Recycling.** Over several years, Golden has added solar-powered Big Belly trash and recycling bins, to increase capacity and keep downtown clean and to serve large numbers of visitors to downtown each year.

**Municipal Organization Recycling.** Single stream recycling is available throughout all City-owned buildings and offices and employees strive to divert waste associated with batteries, toner cartridges, and electronics.

**Rooney Road Household Hazardous Waste.** Located in Golden, the Rooney facility is a partnership of 9 cities in Jefferson County, and accepts hard to recycle materials for a fee which include household toxic chemicals, cleaners, poisons, used oils, batteries, paints, and electronics.



**Free Tours of Recycling & Organics Facilities.** Where does my recycling go? How is my organic waste composted? During spring and fall, Golden residents are invited to tour each of the facilities that our waste is diverted to for recycling or reuse.



## WATER PROGRAMS

**Smart Water Meters.** In 2017, the City retrofitted all water meters at homes and businesses with new smart meter technology which can provide greater and more timely details on water consumption.

**AquaHawk Alerting online system.** This free online website can show nearly real time data for water consumption at a home or business. Leak monitoring is a useful part of the program, but understanding water consumption for one's household is a first step toward greater water conservation.

Check Your  
Water Usage @



**Garden In A Box kits.** For more than ten years, Golden has offered discounts to residents who wish to plant water-wise xeric plants. These low water use perennials are picked by landscape professionals and are suited to Golden's arid climate.

**Grass To Garden turf replacement program.** A pilot program in 2019, three homeowners received professional help to replace turf areas with xeric perennial plants and drip irrigation. This project is measuring the impact of before and after and will offer videos and how-to guides for DIY homeowners.



**Commercial water audits.** A test pilot program for several years, this service provides a water audit of indoor fixtures to help businesses owners understand where to make investments and repairs.

**Slow The Flow Free Irrigation Audits.** Offered to all residential areas, single family and multi-family areas alike, the free irrigation audit program provides a professional audit of existing irrigation and a report to help owners make repairs and improvements to maximize water efficiency and provide a custom watering report for their landscape.



**A Partnership for Safe Drinking Water.** Golden strives to provide water that exceeds state and federal water quality standards and the Partnership is one way it demonstrates transparency through this goal.



**Community Gardens.** The Sustainability Initiative has provided seed funding (no pun intended!) for a variety of community-led neighborhood gardens, including the main Golden Community Garden, East Street Garden, Mitchell Elementary Garden, Shelton Elementary Garden, the Natural Grocers Community Garden and the Beverly Heights Community Garden.

**Graywater Reuse.** Another pilot program, this project will analyze the potential of graywater reuse for its ability to make progress toward Golden's water goals. The proposed Laundry To Landscape program would allow homeowners to install a valve behind their washing machine to divert wastewater outside toward landscaping beds, thereby conserving water for irrigation. City Council review is expected in October 2019.



**Pharmaceutical Roundups.** Diverting drug waste from the landfill might seem like a waste diversion program, but keeping drugs out of our local water supply is actually an important water quality effort. Golden accepts drugs year round at a drop off box at City Hall and collects more than 300 pounds annually.

**Free Drinking Water.** Golden is one of the first communities in Colorado to build portable drinking water stations for use at community events. This effort not only includes education on Golden's great quality municipal water, but also helps to reduce single use plastic bottles. In addition, permanent water bottle-filling stations are installed throughout downtown and along walking and biking trails.



**Watershed protection.** The City's water goals include efforts to protect ecosystem health, which incorporate annual Clear Creek cleanup events, habitat restoration along Clear Creek and Kinney Run ponds, erosion protection at Apex Park and along regional trails, periodic habitat and species assessments, and endangered species protection.



Guanella Reservoir: Golden's drinking water, Empire, CO



## WHAT IS GOLDEN'S CITY GOVERNMENT WORKING ON? SUSTAINABILITY IN ALL ACTIONS



**Energy Performance Improvements.** In 2007-2008, the City contracted for \$1.6M worth of energy improvements and upgrades, including a lighting retrofit, replacements of major HVAC units, air handling units, and variable frequency drives at the larger city buildings, including the Water Treatment Plant. This project also received a \$500,000 grant from the State, making a return on investment in six years.

**Municipal Solar.** In 2015, the City installed 680 kW of solar photovoltaic systems at 9 city facilities, including:

- City Maintenance Shops (260kW)\*
- Splash Water Park (154kW)\*
- Tony Grampas Gymnasium (70kW)\*
- Golden Community Center (55kW)
- Fire Station 24 (Heritage Road) (41kW)\*
- Fossil Trace Maintenance Shop (41kW)\*
- Public Works & Planning Office building (41kW)\*
- Fossil Trace Johnson Road Restrooms (9kW)
- Fossil Trace Illinois Street Restrooms (9kW)
- An additional solar thermal system at the Golden Community Center for pool heating



**LEED for City Buildings.** As a demonstration to the Golden community, the City adopted a LEED goal for new construction and major renovations. With recent updates to Golden's Sustainability Goals, the Board will make recommendations for higher targets for city buildings.

**Zero Waste in City Operations.** Golden's latest Sustainability goals, updated by City Council in 2019, include a target to strive for zero waste in municipal operations by 2030. To this end, the City will look to add compost collection in all city facilities, recycling in city parks, and make every effort to achieve zero waste at community events.



**Annual City of Golden Sustainability Awards.** For 11 years, the City has recognized students, businesses, community groups and individuals for their contributions toward making Golden more sustainable. Over the years, City Council and the Community Sustainability Advisory Board have presented awards to more than 45 recipients, chosen from hundreds of nominations.

**National and Global Climate Commitments.** Golden aims to remain at the forefront of taking action to address climate change and increase Golden’s resiliency. The City as an organization, City Council, and Mayor Marjorie Sloan belong to several organizations dedicated to addressing climate change or adopting goals. These include:

- The Paris Accord, aka, the United Nations Paris Agreement
- Sierra Club’s Ready For 100 – a target to achieve 100% renewable energy for communities
- Colorado Communities for Climate Action – a coalition of local governments advocating for stronger state and federal climate policy.
- The Compact of Colorado Communities – a statewide group of elected officials and staffs, dedicated to climate projects, trainings, and policies.
- Climate Mayors – a peer network of U.S. mayors demonstrating leadership and building political will for effective federal and global policy action.
- WaterNow Alliance – Western U.S. communities focused on sustainable water infrastructure and policies
- Cities for Climate Protection – a campaign by ICLEI Local Governments for Sustainability to adopt milestones including a greenhouse gas emissions inventory and action plan.



**Grants.** The City continues to look for funding opportunities and has secured several grants in the past few years:

- \$500,000 from the State of Colorado Department of Local Affairs for an energy retrofit of municipal buildings
- \$75,000 from the State for the installation of ten dual electric vehicle charging stations.
- \$25,000 from WaterNow to research and adopt a Graywater Reuse Program
- \$18,000 from the Colorado Department of Public Health & Environment for an Energy Advisor Program and Radon Mitigation Program
- In-kind technical assistance to perform an carbon footprint study with sustainable energy benchmarks for Golden from the university of Colorado Denver
- In-kind technical assistance from The Mayor Innovation Project in collaboration with the Harvard Kennedy School to test different marketing strategies to effect behavioral change to encourage water conservation.
- In-kind technical assistance from the Colorado School of Mines and the National Renewable Energy Laboratory to research and help solve a variety of Golden’s sustainability issues, including



LED Streetlight Conversion (2008)  
Industrial Ecology (diverting waste materials) (2011)  
Wind mapping of Golden (2013)  
Analyzing energy policies (2013)

Zero energy student housing (2014)  
Water education for local teachers (2015-2019)  
Community Solar project analysis (2016)  
Solar Decathlon teams (2016)  
Energy efficiency in tiny houses (2016)

**Partnerships.** Striving for sustainability requires local and regional partnerships and Golden seeks out experts who can provide technical and policy guidance for its programs. Golden works with many nonprofits, community organizations and civic groups, including:

Citizens Climate Lobby	Colorado Renewable Energy Society	Resource Central
Climate Mayors	GoFarm	Rocky Mountain Climate Network
Conservation Colorado	Golden Schools: Golden High School, Bell Middle School, Shelton Elementary, Mitchell Elementary and Montessori Institute for Environmental Solutions	Rooney Road Household
Colorado Communities for Climate Action	McKinstry Essention inc.	Hazardous Waste
Colorado Energy Office	Metro Denver Solar Home Tour	Regional Transportation District
Colorado Environmental Film Festival	National Renewable Energy Laboratory	Shop Local Committee
Colorado School of Mines	Natural Capitalism Solutions	Sierra Club
Colorado Solar Energy Industries Association	Recycle Colorado	Southwest Energy Efficiency Projects
Compact of Colorado Communities	Regional Air Quality Council	State of Colorado Climate Resilience Project
MillerCoors		State of Colorado Land Board
EcoCycle		U.S. Department of Energy
New Energy Colorado		U.S. Green Building Council
		WaterNow
		Western Resource Advocates

**Outreach and Citizen Participation.** Golden's Sustainability Initiative was formed and continues to be informed, by citizens. Whether it's student input from kindergarten to graduates, resident experts or those simply interested, Golden offers continuous opportunities to help shape sustainability policies, be informed, and stay involved:

- Sustainability Task Forces (seven groups, seated in 2007)
- Walkability (2007)
- Bikeability/Bike Master Plan (2007)
- Let's Talk Trash Open House (2009) and booth at Golden Vision 2030 block parties (2009-2010)
- Local Living Economy Workshop (2011)
- Renewable Energy Technical Advisory Committee (2012)
- Economic Health Summit (2012)
- Golden Farmer's Market Sustainability Booth (summer 2013)
- Golden Sustainability Night (2016)
- Golden's Climate Commitment Celebration (2017)
- Renewable Energy Updates in Jeffco (2017)
- Investment Forum Task Force (2017)
- Community Solar Ballot Campaign (2017)
- Golden Sustainability Night Out (2018)
- All Things Recycling (2019)



## Appendix D: Glossary and Acronyms

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COG	City of Golden
EUI	Energy Use Intensity
Microgrid	A small network of electricity users able to function independently from the larger grid. Microgrids can be powered by batteries, fuel cells or renewable sources like solar.
Microplastics	Extremely small pieces of plastic debris in the environment resulting from the disposal and breakdown of consumer products and industrial waste.
CC4CA	Colorado Communities for Climate Action
CSAB	Community Sustainability Advisory Board
Paris Accord	Also known as The Paris Agreement, it is an international treaty that seeks to reduce the emission of greenhouse gases. The agreement is sponsored by the United Nations Framework Convention on Climate Change (UNFCCC) and went into effect November 4, 2016. The agreement seeks to limit temperature increases in the 21st century to below 2 degrees Celsius and encourage initiatives that bring the increase down to 1.5 degrees Celsius or lower.
CSAB	Community Sustainability Advisory Board. CSAB meets the fourth Wednesday of each month and invites members of the public to attend and provide comments. For more information on Golden's sustainability programs and meeting dates and times, please visit <a href="http://www.cityofgolden.net/sustainability">www.cityofgolden.net/sustainability</a> .